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to the south side. And I believe the neighborhood of Port Antonio, which is the chief stopping place of most of the fruit steamers visiting the island, and therefore a very convenient location, offers unsurpassed natural advantages for the study of the flora of both sea and land. By all means let us have the laboratory, but let it be on a broad and solid basis of general cooperation.—J. E. HUMPHREY, *Johns Hopkins University*.

BOTANIC GARDENS.

To the Editors of the Botanical Gazette.:— I am glad to see the increased interest manifested in our country for botanic gardens, as their influence for good on all classes of persons is far-reaching. A well equipped university in these days is supplied with library, general museum, herbarium, laboratories, and department of publication. As these institutions are located in or near cities, there is no need for them to duplicate what abounds in the public parks. In the colder portions of the year cultivated plants can be purchased of commercial growers at moderate cost.

The two most common and important defects of many colleges, in the estimation of the botanist, are a botanical museum and a garden in which are grown hardy plants, including trees. If well designed and well kept, these gardens are great attractions to visitors as well as useful to all classes of students.

Universities, colleges, schools of almost every kind, need the use of a botanic garden more and more. As the country becomes older many of the most interesting plants are driven farther and farther back; the roadsides are "slicked up," the odd corners cleared, the wood lot is pastured, the swamps are ditched and burned over. People of all classes are growing up in ignorance of many kinds of wild plants that were once common. In many places people who live in the country are becoming much like those who dwell in the city; both alike crave something which cannot be supplied except by contact with trees, shrubs, grass, weeds, nature clothed in green.

Again, most young people who acquire a love for botany acquire it by coming in contact with nature, especially if accompanied by some skillful guide. Enthusiasm in this direction rarely comes from a study of books alone. Even a garden of small pretensions is of great value, greater than can be understood by those who have tried to rely solely upon the woods and swamps for supplies. It is not costly, and a small start will usually lead to an appreciation by all who see it, and some will assist in securing something better.

With our modern way of sending students to nature for their facts regarding plants, it becomes more and more the habit of teachers to assign certain definite subjects, one or more to each pupil, for essay or thesis. In the

writer's experience nothing pleases young or old students better ; they all like it. The variety of topics for study in a garden are endless ; it may be a study of many kinds of bulbs, rootstocks, runners, insect maneuvers among flowers, the study of eccentric aquatics, bog plants, plant dispersion, modes of spreading, effect of heat and cold, light and shade.

As nearly as practicable all botanists would prefer plants arranged in families, but there may be in addition groups to illustrate certain features of botany, such as medicinal plants ; fiber plants ; compass plants ; sensitive plants ; climbing plants ; hybrids ; modes of distributing seeds and fruits ; modes of self-protection by odors, taste, thorns, nettles and the like ; a weed garden ; a grass garden ; a collection of host plants affected by certain interesting fungi, especially those living on two hosts like the rust on barberry and wheat, sedge and nettle, cedar and apple-tree ; plants delighting in dry sand ; plants holding fruit in winter ; a group of plants abundantly clothed with hairs ; a group of small evergreens, broad-leaved and pin-leaved ; a floral clock ; plants indicating fertile soil or barren soil ; a group of native plants promising for cultivation for their seeds or fruits ; plants of especial use for protecting hillsides and embankments ; plants useful for carp ponds ; plants poisonous to the touch ; plants poisonous to eat ; parasitic plants ; saprophytic spermatophytes ; and the formation of still other groups which will occur to botanists.

The mere horticulturist would discard the natural system of classification in his grouping and run to bedding plants, mixed borders, duplicate patches often arranged symmetrically, and very likely more or less trimmed into artificial form. The engineer would be in danger of running into geometrical figures and grading with terraces. The landscape gardener will plan especially for display, employing a limited number of multiple plats of what he terms the choicest gems of plant growth, neglecting all else. The mere botanist will like a variety, but will most likely lack the tact of the gardener in planting and the management of plants, such as giving each the treatment peculiar to its needs.

Doubtless the greatest success will be attained when the director has in a considerable degree the eye of a botanist, the deft hand of a gardener, the skill of an engineer, the taste of the landscape artist. As he lacks in a marked degree any of these, the garden will fall short of the best that can be done with the means at hand.

Wealthy persons endow astronomical observatories, dormitories, laboratories, libraries, professorships, scholarships, but very rarely think of endowing a botanic garden. Yet as we look at it, what can be more delightful than the thought of having one's name associated with a well kept garden, which shall be a great attraction to thousands of people for the greater part of the year for many years to come. Were there more well kept gardens, doubtless

the wealthy would oftener see that they were not wanting for substantial support.

I would not delay the starting of a small garden because I was not ready to maintain a large one. The delay may be long and the garden never appear. As in most kinds of business, there are some good reasons why a botanic garden should start as a small garden. The director must learn some things by experience; no matter how well he may be equipped, the subject will grow as he gives it more thought and as he carries his ideas into execution. To maintain a botanic garden of 1500 hardy plants, excluding most trees and not including the first outlay of the land, will cost not far from fifteen hundred dollars a year in a country place where living is not expensive. In cities it might be two or three times as much. One acre of land would answer very well for 500 kinds of plants, allowing room for paths and small ponds and bogs.—W. J. BEAL, *Agricultural College, Mich.*

THE ACAULESCENT VIOLETS.

To the Editor of the Botanical Gazette.—In the last issue of *Pittonia* I observe that Professor Greene discusses the same group of acaulescent violets of which I published, last spring, the sketch of a proposed revision.¹ I have read with much interest the argument by which he proceeds a step farther in the segregation process, separating *V. cucullata* Ait. from *V. obliqua* Hill. The feature of short-peduncled cleistogamous flowers with hypogaeous fruit, assigned by Professor Greene to *obliqua* in contradistinction to the erect, elongated fruiting peduncles of *cucullata*, may prove a character of some value in separating the species; but from a fairly thorough field knowledge of nearly every phase presented by *obliqua*, I am not prepared to admit that at the proper season specimens cannot be found exhibiting cleistogamous flowers and capsules with peduncles of every possible length, and these all on the same plant. As to the habitat, I think it will be found that the form with leaves of a dark green hue often occurs in open meadows instead of in "somewhat dense, moist thickets," and pale colored specimens are not rare in the shade. In view of the great confusion that has existed among this group of the violets, however, I am quite open to conviction upon this point; and I certainly agree with Professor Greene in the idea that the æstival and autumnal stages of our violets are too much neglected by collectors. Floral characters in this genus are of little value, and we must look to capsule and seeds for permanent specific distinctions.

With respect to the name, *obliqua*, I may say that I was fully aware of the inaccuracies of Hill's plate, against which Professor Greene inveighs so strongly; but I could neither then, nor can I now find any other American

¹ Proc. Biol. Soc. Wash. 10: 85-92. 1896.